

Amendments to the Claims

Please amend Claims 172-189, 191, 192, 194, 203-207 and 209-212. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

172. (Currently Amended) A substrate with a surface comprising a plurality of polypeptides with different, known sequences bound to the surface in positionally defined locations, at a density exceeding 400 different polypeptides occupying a total area of less than 1 cm² on said substrate, each of said ~~groups of~~ polypeptides having a different polypeptide ~~sequence~~ sequences.
173. (Currently Amended) The substrate as recited in claim 172, wherein said substrate comprises 10³ or more different ~~groups of~~ polypeptides with known sequences bound to positionally defined locations of said substrate.
174. (Currently Amended) The substrate as recited in claim 172, wherein said substrate comprises 10⁴ or more different ~~groups of~~ polypeptides with known sequences bound to positionally defined locations of said substrate.
175. (Currently Amended) The substrate as recited in claim 172, wherein said substrate comprises 10⁵ or more different ~~groups of~~ polypeptides with known sequences [[in]] bound to positionally defined locations.
176. (Currently Amended) The substrate as recited in claim 172, wherein said substrate comprises 10⁶ or more different ~~groups of~~ polypeptides with [[know]] known sequences [[in]] bound to positionally defined locations.
177. (Currently Amended) The substrate as recited in ~~claims~~ claim 172, wherein said ~~groups of~~ polypeptides are at least 50% pure within said positionally defined locations.

178. (Currently Amended) The substrate as recited in claim 172, ~~[[it]]~~ wherein the ~~groups of~~ polypeptides are covalently attached to the surface.
179. (Currently Amended) The substrate as recited in claim 172, ~~[[it]]~~ wherein the ~~groups of~~ polypeptides are attached to the surface by a linker.
180. (Currently Amended) A substrate with a surface comprising a plurality of polypeptides with different, known sequences bound to the surface in positionally defined locations, at a density exceeding 1000 different polypeptides occupying a total area of less than 1 cm² on said substrate, each of said ~~groups of~~ polypeptides having a different polypeptide sequence sequences.
181. (Currently Amended) The substrate as recited in ~~claims~~ claim 180, wherein said substrate comprises 10³ or more different ~~groups of~~ polypeptides with known sequences bound to positionally defined locations of said substrate.
182. (Currently Amended) The substrate as recited in claim 180, wherein said substrate comprises 10⁴ or more different ~~groups of~~ polypeptides with known sequences bound to positionally defined locations of said substrate.
183. (Currently Amended) The substrate as recited in claim 180, wherein said substrate comprises 10⁵ or more different ~~groups of~~ polypeptides with known sequences ~~[[in]]~~ bound to positionally defined locations.
184. (Currently Amended) The substrate as recited in claim 180, wherein said substrate comprises 10⁶ or more different ~~groups of~~ polypeptides with known sequences ~~[[in]]~~ bound to positionally defined locations.
185. (Currently Amended) An array of more than 1,000 different ~~groups of~~ polypeptides ~~polypeptide molecules~~ with known sequences bound to a surface of a substrate, said

~~groups of polypeptides polypeptide molecules~~ each in positionally defined locations and differing from other ~~groups of polypeptides polypeptide molecules~~ in monomer sequence, each of said positionally defined locations being an area of less than about 0.01 cm^2 and each positionally defined ~~locations~~ location comprising polypeptides of known sequence, said different ~~groups polypeptides~~ occupying a total area of less than 1 cm^2 .

186. (Currently Amended) The array as recited in claim 185, wherein said positionally defined locations ~~is less than~~ each have an area of about $1 \times 10^{-2} \text{ cm}^2$ to about $1 \times 10^{-5} \text{ cm}^2$.
187. (Currently Amended) The ~~method~~ array as recited in claim 186, wherein said positionally defined locations ~~is less than~~ each have an area of about $1 \times 10^{-2} \text{ cm}^2$ to about $1 \times 10^{-4} \text{ cm}^2$.
188. (Currently Amended) The ~~method~~ array as recited in claim 187, wherein said positionally defined locations ~~is less than~~ each have an area of about $1 \times 10^{-2} \text{ cm}^2$ to about $1 \times 10^{-3} \text{ cm}^2$.
189. (Currently Amended) The array as recited in claim 185, made by the process of:
- providing a polypeptide array comprising at least two different polypeptides immobilized on a surface, and wherein said polypeptides are synthesized on said surface;
 - contacting said surface with a first protected amino acid wherein said first protected amino acid is selectively coupled to a functional group in a first selectively activated region of said surface;
 - contacting said surface with a second protected amino acid without physical segregation of said surface such that said second protected amino acid is selectively coupled to a functional group in a second selectively activated region of said surface; and [[and,]]
 - repeating the above steps until at least [[two]] 1,000 different polypeptides are formed at positionally defined locations within the selectively activated regions on said substrate surface.

190. (Previously Presented) The array as recited in claim 189, wherein said first selectively activated region of said substrate is exposed to light to remove a photoremovable group from said first protected amino acid.
191. (Currently Amended) The array as recited in claim 185, comprising more than 10,000 ~~groups of~~ polypeptides of known sequences.
192. (Currently Amended) An array of polypeptides, said array of polypeptides comprising:
a substrate having a surface; and
a plurality of different polypeptides bound to said surface at a density exceeding 400 different polypeptides/cm², wherein each of said plurality of different polypeptides is attached to said surface in a different positionally defined location of area greater than 100 square ~~microns~~, microns and has a different determinable sequence.
193. (Previously Presented) The array of claim 192, wherein said substrate is a solid support.
194. (Currently Amended) The array of claim 193, wherein said ~~substrate is a~~ solid support is a member selected from the group consisting of particles, strands, precipitates, gels, sheets, tubing, spheres, containers, capillaries, pads, slices, films, ~~plates~~, plates and slides.
195. (Previously Presented) The array of claim 193, wherein said solid support is made of a member selected from the group consisting of polymers, plastics, resins, polysaccharides, silica or silica-based materials, carbon, metals, inorganic glasses, and membranes.
196. (Previously Presented) The array of claim 193, wherein said solid support is glass.
197. (Previously Presented) The array of claim 193, wherein said solid support is a gel.
198. (Previously Presented) The array of claim 193, wherein said polypeptides are attached to said solid support through a linker group.

199. (Previously Presented) The array of claim 193, wherein said array comprises at least 1,000 different polypeptides attached to said solid support.
200. (Previously Presented) The array of claim 193, wherein said array comprises at least 10,000 different polypeptides attached to said solid support.
201. (Previously Presented) The array of claim 193, wherein said plurality of different polypeptides attached to said surface are at a density exceeding 1000 different polypeptides/cm².
202. (Previously Presented) The array of claim 192, wherein each of said different positionally defined locations is physically separated from each of the other positionally defined locations.
203. (Currently Amended) The array of claim 192, wherein said polypeptides in said different positionally defined locations ~~comprise polypeptides that~~ are at least 20% pure.
204. (Currently Amended) The array of claim 192, wherein said polypeptides in said different positionally defined locations ~~comprise polypeptides that~~ are at least 50% pure.
205. (Currently Amended) The array of claim 192, wherein said polypeptides in said different positionally defined ~~location~~ locations are at least 80% pure.
206. (Currently Amended) The array of claim 192, wherein said polypeptides in said different positionally defined locations are at least 90% pure.
207. (Currently Amended) The array of claim [192] 193, wherein said array is produced by a process comprising:

providing a planar, non-porous solid support, said solid support having a plurality of compounds immobilized on a surface thereof, said compounds having protecting groups coupled thereto; deprotecting a first portion of said plurality of compounds on said surface and not a second portion of said plurality of compounds;

reacting said first portion of said plurality of compounds with a first reactant;

deprotecting ~~at least~~ a third portion of said plurality of compounds on said surface, said third portion comprising a fraction of said first portion of said plurality of compounds;

reacting said ~~at least~~ third portion of said plurality of compounds with a second reactant; and

optionally repeating said synthesis steps to produce said polypeptide array.

208. (Previously Presented) The array of claim 192, wherein said polypeptides in said different positionally defined locations are at least 10% pure.
209. (Currently Amended) The array of claim 192, wherein said ~~support~~ substrate is rigid.
210. (Currently Amended) An array of polypeptides, said array of polypeptides comprising:
a planar rigid support having at least a first surface; and
a plurality of different polypeptides bound to said first surface of said planar rigid support at a density exceeding 400 different polypeptides/cm², wherein each of said different polypeptides is attached to said first surface of said ~~solid~~ planar rigid support and has a different determinable sequence.
211. (Currently Amended) The array of claim 210, wherein said density exceeds 1000 different polypeptides occupying a total area of less than 1 cm² on said ~~substrate~~ planar rigid support.
212. (Currently Amended) The array of claim 210, wherein said plurality of different polypeptides exceeds 1000 different ~~groups~~ polypeptides wherein each of said plurality of

different polypeptides is attached to said first surface in a different positionally defined location of area greater than 100 square ~~microns~~, microns and has a different determinable sequence.